Standards contains an account of a determination they have made by the latter method, according to which the ratio for vacuo is $2{\cdot}9971 \times 10^{10}$, with an uncertainty not exceeding 1 part in 10,000. It is interesting to compare this result with the most probable value of the velocity of light, which, according to M. Weinberg's recent discussion of the measurements available, appears to be *in vacuo* $2{\cdot}9986 \times 10^{10}$, with an uncertainty not exceeding 1 part in 10,000.

A METHOD of preserving eggs by dipping them in recently boiled water at a temperature of about 110° F., then into boiling water, and afterwards into cold water, was described in an article in NATURE of November 28 (p. 84). In reply to an inquiry, the writer of the article states that the time during which the eggs are immersed in the water at 110° F. in this method should be about ten seconds.

THE Silica Syndicate, Ltd., of 82 Hatton Garden, has issued a new price-list of chemical apparatus made from transparent vitreous silica by their special process. The apparatus includes evaporating basins, beakers, crucibles, flasks, retorts, and test-tubes; the prices are about 75 per cent. lower than those ruling a year ago, and it is anticipated that as the demand grows for fused silica ware further reductions will become possible. We have had an opportunity of examining the various pieces of apparatus made by the syndicate, and have been struck by their wonderfully clear and homogeneous character as compared with that of silica ware made by other processes. They are, moreover, comparatively thin and light, a fact which makes them useful for many purposes for which coarser vessels would be unsuitable; crucibles of fused silica, for instance, can often be used in place of platinum crucibles. In spite of their thinness, the quartz vessels are very strong and tough, and much less liable to break than either ordinary or Jena glass; even if broken they do not splinter, but merely crack, so that they can easily be repaired by fusing the broken parts together. Such repairs are executed by the syndicate at a trifling cost. To those unacquainted with the properties of fused silica, the following points may be of interest. It does not crack when subjected to the most violent and sudden changes of temperature. It is not attacked by acids, with the exception of hydrofluoric acid, and is harder than ordinary glass. Its melting point is approximately that of platinum, whilst it has a coefficient of expansion of 0·00000059 per degree, that is, about one-seventeenth the value for platinum. So far as is at present known, it shows no tendency to devitrification.

A NEW catalogue of lantern-slides has been received from Mr. C. Baker, 244 High Holborn, W.C. The list contains slides suitable for the illustration of lessons or lectures on natural history, and includes many from photomicrographic negatives, as well as photographs taken from nature with an ordinary camera. Sets of slides have also been arranged to illustrate some leading books on microscopic objects.

MESSRS. J. H. DALLMEYER, LTD., inform us that they have recently appointed several new wholesale agents for their lenses and apparatus abroad. They state that British lens manufacturers, like British dry-plate manufacturers, are able to hold their own in foreign markets in face of high tariffs walls and severe competition. In the United States the duty alone amounts to 45 per cent. of the value of the goods, whilst Germany is the home of the keenest competitors of manufacturing opticians.

WE have received from Messrs. Siemens Brothers and Co., Ltd., two well-produced and conveniently arranged catalogues. One deals with thermoelectric pyrometers and temperature indicators and recorders which can be used for all processes in which the accurate determination of temperature between the limits of about −190° C. and 1600° C. is a necessary factor. The other supplies a descriptive account, with abundant illustrations, of a great variety of electro-medical apparatus. Among these attention may be directed to the patent tantalum X-ray tubes, which can be worked with the anti-kathode at red heat, and the induction coils with variable primary windings. Medical men and others should find the clear diagrams of assistance in understanding the characteristics of the apparatus described.

MESSRS. NEWTON AND CO. have sent us a copy of a descriptive lecture on the moon, illustrated by sixty lantern slides, arranged and prepared by Mr. R. Kerr. The notes upon the characteristic points of the various slides, all of which are from Messrs. Newton's collection, will enable anyone to give an interesting reading on our satellite without possessing special knowledge of astronomy. Another pamphlet containing notes on lantern-slides, intended for purposes of popular lectures, deals with general astronomy. This pamphlet is now in its fifth edition, and has been revised and enlarged. It comprises much information of an old-fashioned type, and can scarcely be considered as representing the work and results of modern astronomy; nevertheless, many instructive notes may be extracted from it. A more careful revision of the pamphlet would have prevented such errors as:—"Of the nature of this ring [of Saturn] . . . we are not acquainted"; 1006 instead of 1066 as the date of an appearance of Halley's comet; "Mr." Huggins for Sir William Huggins; and HB instead of $H\beta$.

OUR ASTRONOMICAL COLUMN.

PHOTOGRAPHS OF JUPITER'S SATELLITES VI. AND VII.—During the opposition of 1905–6 eighty-six photographs of Jupiter's sixth satellite were secured at the Greenwich Observatory, with the 30-inch reflector, between August 23, 1905, and February 15, 1906. Nineteen photographs of the seventh satellite were taken between October 22, 1905, and January 26, 1906. The opposition of 1906–7 was somewhat marred by bad weather, but on twenty-eight nights, spread over a period of 222 days, fifty-six photographs of the sixth satellite were obtained. Only on seven nights, during a period of eighty-seven days, were photographs of the seventh satellite secured, amounting to twelve in all. From these photographs the positions of the satellites were determined, and the results are shown graphically on two diagrams published in the Monthly Notices for November (vol. lxvii., No. 9, p. 561). The orbits of the four major satellites are shown for comparison, and the difference in the size of the orbits of the four inner and two outer satellites is very striking.

TEMPERATURE CONTROL OF SILVERED MIRRORS.—No. 122 of the Lick Observatory Bulletins contains a short paper by Dr. Heber D. Curtis on the temperature control of silvered specula. The writer discusses first the previous records of changes in the focal lengths of large specula, briefly referring to the experience of Profs. Keeler, Perrine, Hale, and Wright in this matter. He then describes a method of artificial cooling which he has tried, and found to be effective, with the 37-inch Mills reflector, which is being used by the D. O. Mills expedition to the southern hemisphere, of which he now has charge.

The large mirror has a clear aperture of 36·56 inches and a focal length of 17·46 feet, and, during his work with this instrument, Prof. Wright found that a progressive lengthening of the focal length, amounting to from fifteen to twenty-five millimetres, took place during the first four or five hours of each night's work, the drop in temperature being some 5° C. or 6° C. In the first place, Dr.

Curtis increased the ventilation apertures about the mirror so that about one-sixth of the area of the back of the mirror was directly exposed. This, apparently, had little effect, so a refrigerating machine was obtained and put into operation. The machine is of the anhydrous ammonia type, and is automatic in action. To cool the mirror the telescope is placed vertical, and a movable box brought into position to enclose the cooling pipes and the mirror end; two electric fans circulate the cooled air freely around the mirror. This operation is commenced about three hours before sunset, and when the thermometer shows a fall of 5° C. or 6° C. the case is removed, about forty minutes before sunset. No moisture forms on the silvered surface, which may be 3° C. or 4° C. below the temperature of the surrounding atmosphere when observations commence. This method has proved very successful, for focal changes are, as a rule, not noticeable, and scarcely ever exceed five millimetres. Dr. Curtis's account of his experiments also appears in the current number of the *Astrophysical Journal*, and is there illustrated by two photographs, the one showing the telescope and spectrograph, the second showing the wooden cooling chamber in position.

ORBITS OF SPECTROSCOPIC BINARIES.—From plates taken with the Mills reflector, the orbits of the spectroscopic binaries α Carinæ, α Pavonis, and κ Velorum have been determined by Dr. Curtis, and their elements are published in No. 122 of the Lick Observatory Bulletins. α Carinæ is a star of magnitude 3·5, and its spectral type is given as B3A in the Harvard classification. According to the elements now published, its period is 6·744 days, the velocity of the system is +23·3 km., and the length of the semi-major axis of the orbit is 1,960,000 km. For α Pavonis (mag. 2·0) the period is 11·753 days, the velocity of the system is +2·0 km., and the length of the semi-major axis is 1,170,000 km.; the orbit is nearly circular. The period of κ Velorum (mag. 2·6) is 116·65 days, the velocity of the system = +21·9 km., and the length of the semi-major axis =73,200,000 km. All three stars are of the same type of spectrum.

MELLISH'S COMET, 1907*e*.—A new set of elements and an ephemeris extending to December 31·5 are given in Lick Observatory Bulletin No. 124 for Mellish's comet. The position for December 11·5 is $\alpha = 0h.\ 12m.$, $\delta = +27°\ 2'$, about $1\frac{1}{2}°$ south-east of α Andromedæ, and the brightness is about one-third that at the time of discovery. The following positions are taken from the ephemeris:—December 23·5 (G.M.T.), $\alpha = 23h.\ 56m.$, $\delta = +26°\ 30'$; December 31·5, $\alpha = 23h.\ 52m.$, $\delta = +26°\ 30'$ (brightness = 0·09).

SOLAR PROMINENCES IN 1906.—Prof. Ricco's annual summary (1906) of the prominence observations made at Catania appears as an abstract from vol. xxxvi. (1907) of the *Memorie della Società degli Spettroscopisti Italiani*. The following are the mean values for the year:—daily frequency = 2·7, complete extension along the limb = 7°·5, height of prominences = 44″·2. As one would expect near the epoch of maximum, these values are nearly equal to those obtained in 1905. It is interesting to note that whereas the sun-spot frequency curve showed maxima in February and November, 1905, the prominence maximum appears to have been relatively retarded, the second greatest maximum recorded at Catania having occurred in March, 1906. Considering the heliographic latitude of the prominences in 10° zones, the principal maximum took place in ±20° to ±30°, as in 1905, but the secondary maximum was elevated ten degrees from ±60° to ±70° to ±70° to ±80°; this is another characteristic of the maximum epoch. Excepting the fourth trimestre, the number of prominences observed in the northern hemisphere of the sun was greater than that observed in the southern hemisphere, the numbers for the year being 284 and 185 respectively.

SEARCH EPHEMERIS FOR COMET 1907*a* (GIACOBINI).—Believing that comet 1907*a* might still be observed in large instruments or found on long-exposure photographs, Prof. Weiss publishes a search-ephemeris for this object in No. 4218 of the *Astronomische Nachrichten* (p. 300, December 2). The comet is now some 10 m. west of α Persei, and its estimated magnitude is 13·8.

PRIZES AWARDED BY THE PARIS ACADEMY OF SCIENCES.

Geometry.—The Francœur prize is awarded to Emile Lemoine, for the whole of his work in mathematics; the Bordin prize to F. Enriques and F. Severi jointly, the Vaillant prize being divided between J. Hadamard, Arthur Korn, Giuseppe Lauricella, and Tommaso Boggio.

Mechanics.—A Montyon prize is awarded to M. Cuënot, for his experimental studies on the flexure of rails; an exceptionally honourable mention to M. Petot, for his work on the theory of automobiles; the Poncelet prize to Colonel Renard, for his mathematical and experimental researches in mechanics, and for his contributions to aëronautics.

Navigation.—The extraordinary prize of six thousand francs is divided between M. Gayde (two-thirds) and J. Estève (one-third), the Plumey prize not being awarded.

Astronomy.—The Pierre Guzman prize is not awarded. T. Lewis receives the Lalande prize, M. Giacobini the Valz prize, and M. Gaillot the G. de Pontécoulant prize.

Geography.—The Gay prize is awarded to Jean Charcot, for his Antarctic explorations, the Tchihatchef prize being divided between Jacques de Morgan and Paul Crépin Bourdier de Beauregard.

Physics.—Lucien Poincaré receives the Hébert prize, for his book on modern physics; P. Langevin the Hugues prize, for his work on the mobility of gaseous ions and the properties of electrons; M. Mathias the Gaston Planté prize, for his work on terrestrial magnetism; Paul Villard the La Caze prize, for the whole of his researches in physics; and Pierre Weiss the Kastner-Boursault prize, for his experimental and theoretical work in magnetism.

Chemistry.—The Jecker prize is divided between MM. Blaise, Marcel Delépine, and Hamonet, and the Cahours prize between MM. Gain, Mailhe, and Guillemard. A Montyon prize (unhealthy trades) is awarded to M. Bonneville, for his discovery and manufacture of a cement in which metallic zinc replaces the red lead commonly used.

Mineralogy and Geology.—M. Martel is awarded the grand prize of the physical sciences, for his studies on underground waters, and J. J. H. Teall the Delesse prize, for his researches in petrography.

Botany.—The Desmazières prize is awarded to General E. G. Paris, for his "Index Bryologicus"; the Montagne prize to F. Guéguen, for his work on the lower fungi; the De Coincy prize to F. Gagnepain, for his work on the classification of the Zingiberaceæ; the Thore prize to M. Bainier, for his work on the lower fungi; and the de la Fons-Mélicocq prize to C. Houard, for his memoir on the parasitic deformations of plants in northern France.

Anatomy and Zoology.—Charles Alluaud receives the Savigny prize, for his work on the invertebrates of Upper Egypt and the adjacent portions of Africa.

Medicine and Surgery.—Montyon prizes are awarded to J. Henniquin, for his work on the treatment of fractures; C. Levaditi, for his researches on *Treponema pallidum*; and Maurice Villaret, for his researches in connection with urinary secretion. Mentions are accorded to A. Thiroux and M. d'Anfreville, for their memoir on malaria in Senegal; MM. Nicolle and Mesnil, for their memoir on the treatment of trypanosomiasis by the benzidine colours; and René Gaultier, for his memoir on the functional exploration of the intestine by analyses of the fæces. Gustave Martin, Georges Pécaud, Pierre Breteau and Paul Woog, A. Desmoulière, and M. Guisez receive citations in connection with this prize. J. Guiart and L. Grimbert receive the Barbier prize for their book on chemical, microscopical, and pathological diagnosis. The Bréant prize (interest only) is divided between MM. Vaillard and Dopter, for their researches on bacillary dysentery, and J. Ferran, for his work on the cholera bacillus. The Godard prize is given to Victor Nicaise, for his memoir on the indications and therapeutic value of total or partial nephrectomy in the treatment of hydatoid cyst of the kidney; the Baron Larrey prize to G. H. Lemoine, for his work on military hygiene; the Bellion prize to A. Chantemesse and F. Borel, for their memoir on the protection of the country from diseases introduced from abroad; the Mège prize to J. Castaigne and F. Rathery, for their work on the lesions of the convoluted tube of the kidney; and the Chaussier prize to A. Lacassagne, for his work on forensic medicine.